UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/436,618	11/09/1999	MICHAEL A. B. PARKES	200352	6893

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EXAMINER
ALI, SYED J

ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/436,618	PARKES ET AL.
	Examiner	**Art Unit**
	Syed J Ali	2127
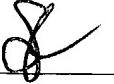
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _10 June 2004_.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-38_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-38_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _June 18, 2004_.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection.   Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on June 10, 2004 has been entered.

2.   This office action is in response to the amendment filed June 10, 2004. Claims 1-38 are

presented for examination.

3.   The text of those sections of Title 35, U.S. code not included in this office action can be

found in a prior office action.

Claim Objections

4.   **Claims 4, 6, 13, 15, 16, 18, 25, 26, 31, and 32 are objected to because of the following**

informalities:

    a.   In claims 4, 6, 15-16, 18, 25-26, and 31-32, the terms "useable" and "usable" are

used to convey the same meaning.   While both are accepted spellings of the term, the

spelling should be consistent throughout the claims.

    b.   In line 2 of claim 13, "on computer system" should read "on a computer system".

    c.   In lines 5-6 of claim 13, "in cache" should read "in the cache" in several places.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5.   **Claims 1-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

6.   The following claim language is indefinite:

a.   As per claim 1, it is unclear as to how the "user context data" and "global data" interact to achieve the claimed invention. Specifically, what data is encapsulated by the "user context" that is then used by the "global data" is not apparent from the claim itself.

b.   The first limitation in claims 4, 8, 31, and 34 recites "in response to receiving a first work packet containing the user context data;". This limitation does not clearly set forth where the "first work packet" is received, or what is done "in response" to the receiving.

c.   As per claim 13, it is unclear as to how the "user context" is used or what is achieved out of its being transferred "between two or more servers". The transferring of the work packet between two or more servers does clearly have any impact on how the computer procedure is carried out.

d.   As per claim 23, it is unclear as to how the "user context" is used or what is achieved out of its being transferred "between at least two servers". The transferring of the work packet between two or more servers does clearly have any impact on how the execution of the computer-executable procedure is carried out. Additionally, the

limitations relating to how the servers operate on the sub-task are not clearly related to the data structure that the claim represents. That is, the data structure encapsulating the "work packet" has no influence on how the servers perform their respective tasks.

e.   As per claim 26, it is unclear as to how the "user context data" and "global data" interact to achieve the claimed invention. Specifically, what data is encapsulated by the "user context" that is then used by the "global data" is not apparent from the claim itself.

f.   As per claim 28, it is unclear as to whether the claim is an independent or dependent claim. As it is currently presented, a computer-readable medium claim cannot depend from a method claim. Additionally, it is indefinite for at least the same reason as stated for claim 1, from which it depends.

g.   As per claims 2-12, 14-22, 24-25, 27, and 29-38, they are dependent from indefinite claims 1, 13, 23, 26, and 28, respectively, and are thus indefinite for at least the same reasons as discussed for their respective parent claims, as they fail to recite any limitations that resolve the deficiencies noted above in the claims from which they depend.

Claim Rejections - 35 USC § 103

7.   **Claims 1-4, 6, 10-11, 13-16, 18, 20-21, 23-32, and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiffin (USPN 6,330,583) in view of Arimilli et al. (USPN 6,330,643) (hereinafter Arimilli) in view of Ghodrat et al. (USPN 6,425,021) (hereinafter Ghodrat).**

8.　　As per claim 1, Reiffin teaches the invention as claimed, including a method of carrying out a procedure on a computer system having a memory, the memory containing user context data and global data, comprising:

executing a first server, wherein the first server defines a computer-executable function for performing a first sub-task of the procedure (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13);

manipulating the global data to carry out the first sub-task (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13);

sending the user context data to a second server (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13); and

executing the second server, wherein the second server defines a computer-executable function for performing a second sub-task of the procedure (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13); and

manipulating the global data to carry out the second sub-task using the user context data (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13).

9.　　Arimilli teaches the invention as claimed, including the following limitations not shown by Reiffin:

wherein the first and second servers are optimized to execute in cache such that, for each server, global data in cache is given priority over user context data in cache (col. 6 line 53 - col. 7 line 29; col. 11 lines 45-67; col. 12 lines 36-63).

10.　　Ghodrat defines a data structure for encapsulating the communication between servers (col. 4 lines 36-50).

11.   It would have been obvious to one of ordinary skill in the art to combine Reiffin,

Arimilli, and Ghodrat since the method of Reiffin, while providing a way of dividing a compute-

intensive task into sub-tasks for processing on multiple CPUs, fails to take into account the high

amount of overhead incurred with multiple instruction fetches and swapping out cache

memories. Arimilli seeks to resolve such cache deficiencies by providing a cache that gives

priority to global or shared data over local or private data. This is due to the fact that the amount

of time required to load local data is much less than required to retrieve data from a shared

memory that may be remote to the processing unit in question. Thus, giving priority to global or

shared data reduces the number of expensive cache misses. Additionally, Ghodrat teaches a way

of transferring the request calls in a data structure such as a packet, which reduces network

traffic and encapsulates all data associated with system calls. The use of packets is also

beneficial for a network system, as communication protocols are well known and would allow

for easy troubleshooting.

12.   As per claim 2, Ghodrat teaches the invention as claimed, including the method of claim

1, further comprising storing the user context data in a work packet and sending the work packet

from the first server to the second server, wherein the work packet contains an action code for

describing an action to be performed by the second server (col. 4 lines 36-50).

13.   As per claim 3, Ghodrat teaches the invention as claimed, including the method of claim

2, wherein the work packet contains a reply state, and the method further comprises:

causing the second server to update the work packet by replacing a value contained in the action code with a value contained in the reply state (col. 4 lines 36-50); and

causing the second server to send the updated work packet back to the first server (col. 4 lines 36-50).

14.   As per claim 4, Reiffin teaches the invention as claimed, including the method of claim 1, further comprising:

in response to receiving the user context data (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13);

causing the first server to partly perform the first sub-task (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13);

sending the user context data from the first server to the second server (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13);

causing the second server to perform the second sub-task and store a result of the second sub-task (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13); and

sending the result from the second server to the first server, wherein the result is useable by the first server to complete the performance of the first sub-task (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13).

Ghodrat teaches the invention as claimed, including the communication between servers being handled through use of work packets (col. 4 lines 36-50).

15.   As per claim 6, Arimilli teaches the invention as claimed, including the method of claim

1, wherein the computer system has a first CPU and a second CPU (Fig. 6, elements 44a-h), and

the cache is comprised of a first area useable by the first CPU (col. 11 lines 49-53) and a second

area useable by the second CPU (col. 11 lines 49-53), and the executable code of the first server

is optimized to fit in the first area and the executable code of the second server is optimized to fit

in the second area (col. 6 line 53 - col. 7 line 29; col. 11 lines 45-67; col. 12 lines 36-63).

16.   As per claim 10, Reiffin teaches the invention as claimed, including the method of claim

1, wherein the computer system has a plurality of CPUs, and at least one server executes on only

one CPU at a time (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8; col. 5 line 63 - col. 6 line 13).

17.   As per claim 11, Reiffin teaches the invention as claimed, including the method of claim

1, wherein the computer system has a plurality of CPUs, and at least two instances of one of the

servers execute concurrently on different CPUs (col. 2 lines 19-33; col. 4 line 60 - col. 5 line 8;

col. 5 line 63 - col. 6 line 13).

18.   As per claims 13-16, 18, and 20-21, all of the limitations therein are similar to those of

claims 1-4, 6, and 10-11. Therefore, the discussion of claims 1-4, 6, and 10-11 provide the basis

for rejection of the present claims as well.

19.   As per claim 23-25, all of the limitations therein are similar to those of claims 1-3.

Therefore, the discussion of claims 1-3 provide the basis for rejection of the present claims as

well

20.   As per claims 26-27, all of the limitations therein are similar to those of claims 1-4.

Therefore, the discussion of claims 1-4 provide the basis for rejection of the present claims as

well.

21.   As per claims 28-31, 32, and 36-37 all of the limitations therein are similar to those of

claims 1-4, 6, and 10-11. Therefore, the discussion of claims 1-4, 6, and 10-11 provide the basis

for rejection of the present claims as well.

22.   **Claims 5 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over**

Reiffin in view of Arimilli in view of Ghodrat in view of Austvold et al. (USPN 6,266,708)

(hereinafter Austvold).

23.   As per claim 5, Austvold teaches the invention as claimed, including the following

limitations not shown by Reiffin, Arimilli, or Ghodrat:

        the method of claim 4, wherein the second work packet is linked as a child to the first

work packet (col. 3 lines 9-45).

24.   It would have been obvious to one of ordinary skill in the art to combine Reiffin,

Arimilli, and Ghodrat with Austvold since Austvold provides a way of permanently linking a

work request with its response. Since Reiffin deals with asynchronous interruption and timesliced processing, Austvold would thereby allow a way of ensuring that a response to a request is properly handled, even if the task is preempted or otherwise delayed.

25.   As per claim 17, all of the limitations therein are similar to those of claim 5. Therefore, the discussion of claim 5 provides the basis for rejection of the present claim as well.

26.   **Claims 7-8, 19, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiffin in view of Arimilli in view of Ghodrat in view of Vitter et al. (USPN 5,485,609) (hereinafter Vitter).**

27.   As per claim 7, Vitter teaches the invention as claimed, including the method of claim 1, wherein the procedure is a search of a database index tree containing a plurality of nodes, the first sub-task is to examine a node and the second sub-task is to perform an input/output operation for retrieving the node from memory and storing the node in the cache (col. 3 line 61 - col. 4 line 3).

28.   It would have been obvious to one of ordinary skill in the art to combine Reiffin, Arimilli, and Ghodrat with Vitter since caching allows a process to execute much faster than retrieving data from memory. Various techniques are known that predict when a node may need to be fetched. Furthermore, this fits well within the disclosure of Reiffin since Reiffin teaches breaking a compute-intensive procedure up into subtasks. In this regard, it is possible that one

sub-task can retrieve data from memory and place it in cache, while the other sub-task
concurrently is executing on data already stored in cache.

29.   The combination of Reiffin, Arimilli, Ghodrat, and Vitter show all the limitations of
claim 8. Specifically, Vitter teaches the invention as claimed, including determining if a node is
in cache, and if not retrieving the node from the database in main memory and putting the node
into cache (see discussion of claim 7). Furthermore, Ghodrat teaches the invention as claimed,
including the use of work packets executing on different contexts to service requests and receive
responses (see discussion of claim 2). The remaining limitations related to the partial processing
of the procedure by a first and second server are similar to those presented and discussed above
in claim 4.

30.   As per claim 19 all of the limitations therein are similar to those of claim 7. Therefore,
the discussion of claim 7 provides the basis for rejection of the present claim as well.

31.   As per claims 33-34, all of the limitations therein are similar to those of claims 7-8.
Therefore, the discussion of claims 7-8 provides the basis for rejection of the present claims as
well.

32.   **Claims 9 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Reiffin in view of Arimilli in view of Ghodrat in view of Vitter in view of Austvold.**

33.   As per claim 9, Austvold teaches the invention as claimed, including the method of claim

8, wherein the first work packet contains a reference to a parent work packet (col. 3 lines 9-45).

34.   It would have been obvious to one of ordinary skill in the art to combine Reiffin,

Arimilli, Ghodrat, and Vitter with Austvold since Austvold provides a way of permanently

linking a work request with its response. Since Reiffin deals with asynchronous interruption and

timesliced processing, Austvold would thereby allow a way of ensuring that a response to a

request is properly handled, even if the task is preempted or otherwise delayed..

35.   As per claim 35, all of the limitations therein are similar to those of claim 9. Therefore,

the discussion of claim 9 provides the basis for rejection of the present claim as well.

36.   **Claims 12, 22, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable**

over Reiffin in view of Arimilli in view of Ghodrat in view of Doi et al. (USPN 6,298,382).

37.   As per claim 12, Doi teaches the invention as claimed, including the following limitations

not shown by Reiffin, Arimilli, or Ghodrat:

        the method of claim 1, wherein the computer system has a first CPU and a second CPU,

and the work packet has a designated value, and wherein one of the servers executes on the first

CPU when the designated value falls within a first range and executes on the second CPU when

the designated value falls within a second range. Specifically, Doi discloses prior art (Fig. 9; col.

2 lines 55-62).

It would have been obvious to one of ordinary skill in the art to combine Reiffin, Arimilli, and Ghodrat with Doi since Reiffin pertains to information retrieval methods, as in from a network device, as well as dividing a larger task into sub-tasks for simplified processing. Furthermore, Doi provides the added benefit of allowing processors to only search out data on specific ranges, thereby increasing the predictability of the data retrieval, and therefore making caching of data a quicker, more reliable process.

38.   As per claim 22, all of the limitations therein are similar to those of claim 12. Therefore, the discussion of claim 12 provides the basis for rejection of the present claim as well.

39.   As per claim 38, all of the limitations therein are similar to those of claim 12. Therefore, the discussion of claim 12 provides the basis for rejection of the present claim as well.

Conclusion

40.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
August 3, 2004

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